

ENVIRONMENTAL  
PROTECTION  
95 JUN 12 PM 1:45

**SECOR**  
*International Incorporated*

June 11, 1996

Swp 580 J

Mr. Barney Chan  
Hazardous Materials Specialist  
Alameda County Department  
of Environmental Health  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, California 94502

**SUMMARY REPORT, SOIL AND GROUNDWATER INVESTIGATION, 580 JULIE ANN WAY,  
OAKLAND, CALIFORNIA, St ID #4008, FOR METZ BAKING COMPANY**

Dear Mr. Chan:

SECOR International Incorporated (*SECOR*) is pleased to submit this Summary Report presenting the procedures and results of a soil and groundwater investigation conducted at 580 Julie Ann Way in Oakland, California (the Site, see Figure 1, Site Location Map). *SECOR* is submitting this document on behalf of the Metz Baking Company (Metz); Metz operates the Site as a San Francisco French Bread Company (SFFBC) baking and distribution facility. The scope of work performed was in general accordance with *SECOR's* Work Plan dated December 14, 1995, as conditionally approved by the Alameda County Department of Environmental Health (ACDEH) in a January 30, 1996 letter.

**SITE BACKGROUND**

The Site is located in a mixed commercial/industrial area and consists of a large warehouse/bakery and an open asphalt parking/work area (Figure 2). The Site is used by the SFFBC to prepare and distribute baked food products. The Site formerly operated one 8,000-gallon capacity gasoline underground storage tank (UST) and one 10,000-gallon capacity diesel UST. Previous subsurface investigations conducted by Groundwater Technology, Inc. (GTI) in June 1991 and *SECOR* in November 1993 indicated the presence of total petroleum hydrocarbons as gasoline (TPHg) and TPH as diesel (TPHd) in soil samples collected in the immediate vicinity of the USTs. At soil boring locations further away from the USTs, low to nondetectable concentrations of TPHg and TPHd were reported. Relatively high concentrations of high-boiling point hydrocarbons (total oil and grease/total recoverable petroleum hydrocarbons) were reported at all boring locations where analyzed. The excavation and removal of the two USTs was supervised by *SECOR* during September 1995. Soil and groundwater samples collected from within the UST excavation during removal activities were reported to contain TPHg, TPHd, and high-boiling hydrocarbons.

The proposed monitoring well location for this investigation was based on hydrogeologic data collected from properties in the vicinity of the Site. The most relevant data was obtained from the Yandell Trucking property located at 563 Julie Ann Way, approximately 100 feet north of the Site. *SECOR* reviewed groundwater elevation data collected during 14 monitoring events between July 1994 and November 1995. These data indicate that the groundwater flow direction at this property has been consistently to the southwest with the exception of one anomalous result in January 1995.

Mr. Barney Chan  
June 11, 1996  
Page 2

## **PRELIMINARY FIELD ACTIVITIES**

Prior to initiation of field activities, *SECOR* prepared a Site-specific Health and Safety Plan (HASP) to address the proposed scope of work and obtained a well construction permit from the Alameda County Flood Control and Water Conservation District (Zone 7). The proposed well location was cleared with respect to underground utilities and other obstructions by California Utility Surveys (CUS) and Underground Service Alert (USA) was notified.

## **FIELD ACTIVITIES**

### **Drilling and Soil Sampling**

*SECOR* supervised the installation of a groundwater monitoring well (MW-1) on February 27, 1996 at the location shown on Figure 2. The borehole was advanced by Bayland Drilling, Inc. of Menlo Park, California utilizing a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers approximately 10 feet below the first encountered groundwater (16.5 feet bgs). Relatively undisturbed soil samples were collected for lithologic description and possible chemical analysis at 2- to 5-foot intervals using a California-modified split-spoon sampler lined with three 6-inch long brass tubes. Soil cuttings generated during field activities were placed in a 55-gallon drum and stored on-site pending appropriate disposal.

A *SECOR* geologist described the soil encountered according to the Unified Soil Classification System (USCS) and maintained a boring log of these descriptions that is included as an attachment. A representative soil sample from each sample interval was screened in the field for the presence of volatile organic compounds (VOCs) using an organic vapor meter 580B Photoionization Detector (PID). Screening results are documented on the boring log. *SECOR* selected one soil sample for chemical analysis from directly above the first encountered groundwater.

The ends of the brass tubes containing the soil samples were covered with teflon sheeting, capped with plastic end caps, labeled, and stored in an ice-filled cooler. The sample selected for chemical analysis was delivered to Superior Analytical Laboratory (Superior) in Martinez, California, a state-certified laboratory with a completed chain-of-custody record. The soil sample collected during the investigation was analyzed for TPHg, TPHd, and TPH as motor oil (TPHmo) by EPA Method 8015, modified; benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020; and semi-volatile organics by EPA Method 8270. The EPA Method 8270 analysis was requested by the ACDEH to evaluate the presence of polynuclear aromatic hydrocarbons (PAHs).

### **Monitoring Well Installation**

The borehole was converted to a groundwater monitoring well at a depth of 14.5 feet bgs after backfilling with sand from 16.5 feet bgs. The well was completed with 10 feet of capped, flush-threaded, 2-inch diameter Schedule 40 PVC 0.020-inch machine slotted well screen from 14.5 feet bgs and completed with blank casing to ground surface. Filter sand was placed in the annular space between the wall of the borehole and casing to a height of a half foot above the screened interval. One foot of bentonite pellets was placed above the sand and hydrated. A cement-grout mixture (5% bentonite) was then placed into the

remaining annular space to ground surface. A flush-mounted, protective water-tight monument cover was then grouted slightly above ground surface to complete the well installation. The well was also fitted with a locking water-tight well cap. Well construction details are provided on Table 1 and are displayed on the attached boring log.

### **Well Development and Sampling**

Monitoring well MW-1 was developed and sampled on February 28, 1996. The well was developed by alternately bailing and surging with a PVC bailer. Well development continued until the groundwater was reasonably free of sediment. During well development, measurements and observations of pH, electrical conductivity, temperature, color, and turbidity were recorded on the attached Groundwater Sample Field Data Sheet. Ten casing volumes of water were removed during well development. All water generated during well development and sampling was stored in a 55-gallon drum at an on-site location pending appropriate disposal.

Following well development, *SECOR* collected a groundwater sample from monitoring well MW-1 for chemical analysis. Prior to sampling, the well was allowed to recover to 80% of the initial water level prior to development. The groundwater sample was collected using a disposable PVC bailer and decanted directly into laboratory-supplied sample containers. Each of the sample containers was labeled, sealed in plastic bags, and placed in an ice-filled cooler. The sample was submitted to Superior along with a completed chain-of-custody record. The groundwater sample collected was analyzed for TPHg, TPHd, and TPHmo by EPA Method 8015, modified and for BTEX by EPA Method 8020.

### **SUBSURFACE CONDITIONS**

Soil encountered from ground surface to approximately five feet bgs was grayish green to black sand and gravelly sand interbedded with dark yellowish brown sandy clay. From five feet bgs to the total depth explored of 16.5 feet bgs, soil consisted of dark greenish gray sandy clay with interbedded greenish gray clay between approximately eight and 13 feet bgs. Other notable soil characteristics observed during drilling included the presence of abundant root material in the greenish gray clay at approximately 10 feet bgs and yellow silt nodules near the total depth of the borehole.

Results of field screening with the PID indicated the presence of organic vapors at each of the sample intervals ranging from 5 to 617 part per million (ppm). The maximum field screening detection of 617 ppm was from the sample interval from 5 to 6 feet bgs. A slight chemical odor was noted in the soil at approximately 4 and 15 feet bgs. These field screening results and field observations are included on the attached boring log. Groundwater was first encountered at 6.0 feet bgs during borehole advancement. On February 28, 1996, stabilized groundwater measurement in well MW-1 was 4.16 feet below the top of PVC casing.

### **SOIL AND GROUNDWATER ANALYTICAL RESULTS**

Soil and groundwater analytical results are summarized on Table 2 and laboratory analytical reports and chain-of-custody records are attached. One soil sample collected from the MW-1 borehole at a depth of 5.5 feet bgs was submitted for chemical analysis. The soil sample was reported to contain TPHg, TPHmo,

and BTEX at respective concentrations of 15 milligrams per kilogram (mg/kg), 240 mg/kg, and 0.170 mg/kg, 0.030 mg/kg, 1.3 mg/kg, and 0.84 mg/kg. TPHd was not detected above the laboratory reporting limit. The soil sample was also reported to contain concentrations of the following PAHs, naphthalene (3.3 mg/kg), 2-methyl-naphthalene (3.6 mg/kg), and di-n-butylphthlate (0.76 mg/kg); no other EPA Method 8270 analytes were detected in this sample.

The groundwater sample collected from well MW-1 was reported to contain TPHg, TPHmo, and BTEX at respective concentrations of 5,900 micrograms per liter ( $\mu\text{g}/\ell$ ), 1,700  $\mu\text{g}/\ell$ , and 540  $\mu\text{g}/\ell$ , 9.0  $\mu\text{g}/\ell$ , 950  $\mu\text{g}/\ell$ , and 110  $\mu\text{g}/\ell$ . TPHd was not detected above the laboratory reporting limit. B

## SUMMARY

The results of this investigation indicate that concentrations of gasoline- and motor oil-range petroleum hydrocarbons are present in soil and groundwater in the immediate vicinity of the former pump islands and USTs. Groundwater analytical results from a sample collected from within the former gasoline UST excavation during UST removal activities in September 1995 indicated the presence of 44 milligrams per liter (mg/l) of TPHg and 1.7 mg/l of benzene. Sample results from the newly-installed groundwater monitoring well MW-1, located downgradient and within 10 feet of the former UST excavation, show more than a seven-fold decrease in TPHg concentration (5.9 mg/l) and a three-fold decrease in benzene concentration (0.54 mg/l) when compared to the levels measured within the UST excavation in September 1995. Additionally, TPHd was not detected above the laboratory reporting limit at the MW-1 well location. Based on the decrease in petroleum hydrocarbon concentrations within 10 feet downgradient of the former excavation it appears as though natural attenuation processes (e.g. aerobic bioremediation, volatilization, dispersion) and the clayey soil types are reducing the concentrations of the contaminants and limiting their migration.

not reasonable conclusion

Soil and groundwater chemical results also support previous conclusions that concentrations of high-boiling point petroleum hydrocarbons (TPHmo, total oil & grease, total recoverable petroleum hydrocarbons) are pervasive in soil throughout the entire Site subsurface. The presence of these hydrocarbons appears to be related to previously placed fill material. Fuel fingerprinting conducted on soil samples collected during UST removal activities in September 1995 indicated the presence of heavy oil or asphaltic material. The presence of PAHs detected in the soil sample collected from the MW-1 borehole are likely related to the heavy oil and/or asphaltic material present in fill material throughout the Site subsurface. The U.S. Environmental Protection Agency, Region 9 (USEPA) has established Preliminary Remedial Goals (PRGs) for chemicals which are commonly used to evaluate risk. The reported concentration of naphthalene (3.3 mg/kg) is well below the established USEPA PRG of 800 mg/kg. PRGs have not been established for the two other PAHs detected in the collected soil sample (2-methyl-naphthalene and di-n-butylphthlate).

## RECOMMENDATIONS

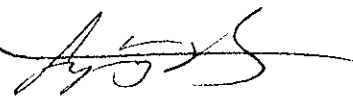
Based on the results of this investigation and previous Site activities, SECOR on behalf of Metz, recommends that this Site be evaluated with respect to the new proposed regulatory guidance of Containment Zone (CZ) and Risk Based Corrective Action (RBCA). SECOR proposes the installation of three additional groundwater monitoring wells at the Site to delineate the extent of petroleum hydrocarbons related to the former USTs (TPHg, TPHd, and BTEX) in soil and groundwater beneath the Site. Two

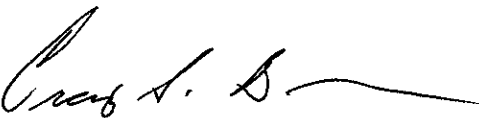
Mr. Barney Chan  
June 11, 1996  
Page 5


wells will be installed at downgradient locations to serve as guard wells and a third well will be installed to evaluate the upgradient extent of petroleum hydrocarbons relative to the UST and address the concern of the ACDEH for further investigation in this area. *SECOR* also recommends that Oxygen Release Compound (ORC) Filter Socks be installed in well MW-1 to enhance natural bioremediation in the vicinity of the well. After the Site has been characterized with respect to the CZ criteria, *SECOR* recommends that Site closure be pursued with respect to RBCA. If you have any questions or comments, please do not hesitate to contact us at (415) 882-1548.

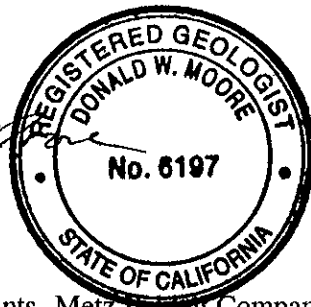
Sincerely,

**SECOR International Incorporated**

  
Liping Zhang  
Staff Geologist

  
Bruce E. Scarbrough, R.G.  
Principal Geologist

  
Donald W. Moore, R.G.  
Project Manager



cc: Mr. Christopher Rants, Metz Dairing Company

**Attachments:**

Table 1 - Well Construction Details and Depth-to-Groundwater  
Table 2 - Soil and Groundwater Analytical Results

Figure 1 - Site Location Map  
Figure 2 - Site Plan with Groundwater Analytical Results

Boring Log  
Groundwater Sample Field Data Sheet  
Laboratory Analytical Results and Chain-of-Custody Records

**TABLE 1**  
**WELL CONSTRUCTION DETAILS AND DEPTH-TO-GROUNDWATER**  
 580 Julie Ann Way  
 Oakland, California

WELL	TOTAL DEPTH <sup>(a)</sup>	SCREENED INTERVAL <sup>(a)</sup>	CASING DIAMETER <sup>(b)</sup>	DEPTH-TO-GROUNDWATER <sup>(c)</sup>	
MW-1	14.5	4.5-14.5	2	2/28/96	4.16

NOTES:

- (a) Measured in feet below ground surface.
- (b) Measured in inches.
- (c) Measured in feet below top of PVC casing.

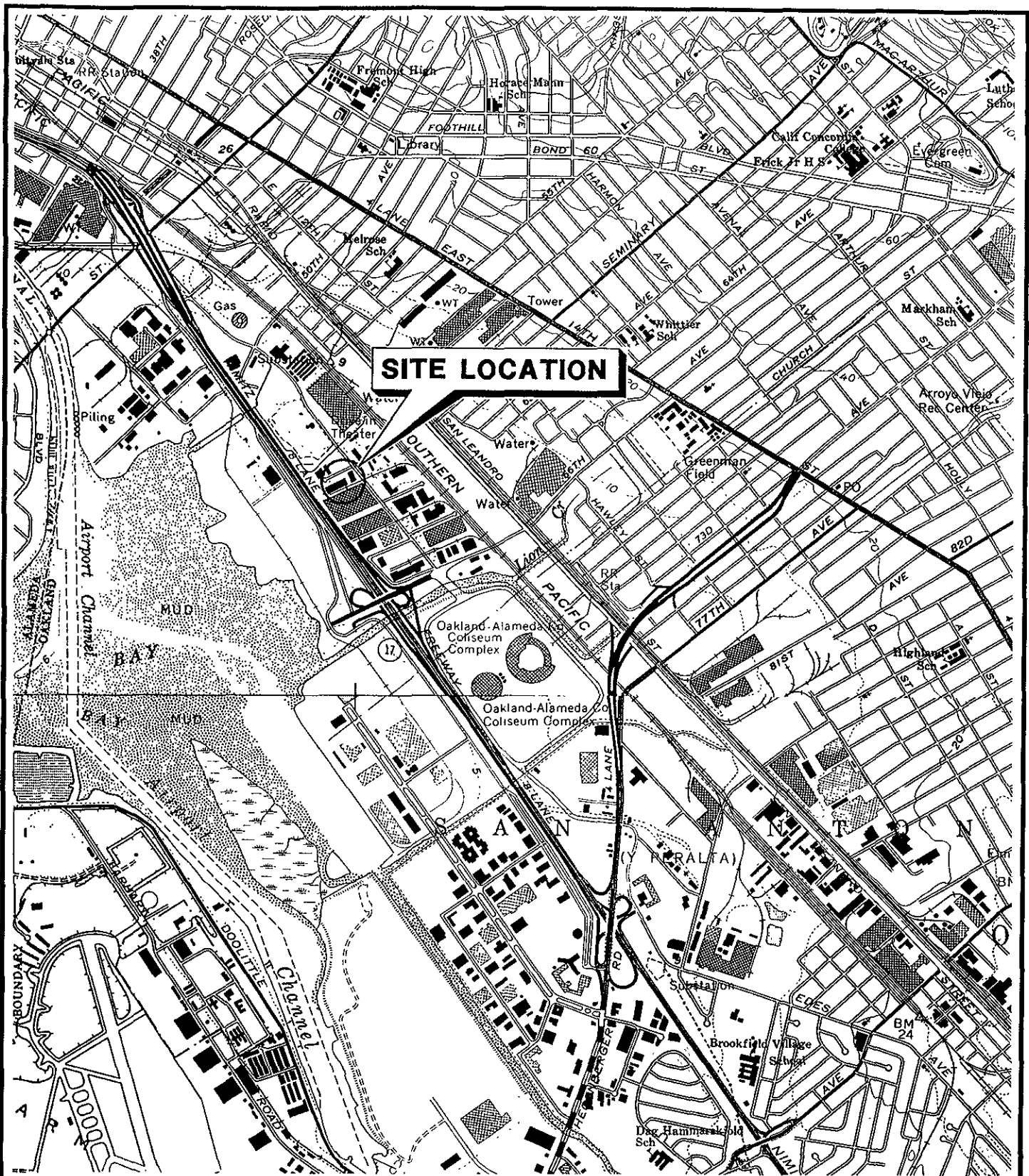
**TABLE 2  
SOIL AND GROUNDWATER ANALYTICAL RESULTS**

580 Julie Ann Way  
Oakland, California

SAMPLE NUMBER	SAMPLE DEPTH <sup>(a)</sup>	TPHg <sup>(b)</sup> (mg/kg) <sup>(c)</sup>	TPHd <sup>(d)</sup> (mg/kg)	TPHmo <sup>(e)</sup> (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
<b>SOIL</b>								
MW-1-5.5	5.5-6.0	15	ND <sup>(f)</sup> < 10	240	0.170	0.030	1.3	0.84
SAMPLE NUMBER	SCREENED INTERVAL <sup>(a)</sup>	TPHg ( $\mu$ g/l) <sup>(g)</sup>	TPHd ( $\mu$ g/l)	TPHmo ( $\mu$ g/l)	Benzene ( $\mu$ g/l)	Toluene ( $\mu$ g/l)	Ethylbenzene ( $\mu$ g/l)	Xylenes ( $\mu$ g/l)
<b>GROUNDWATER</b>								
MW-1	4.5-14.5	5,900	ND < 100	1,700	540	9.0	950	110

**NOTES:**

- (a) Measured in feet below ground surface.
- (b) Total petroleum hydrocarbons as gasoline.
- (c) Milligrams per kilogram.
- (d) Total petroleum hydrocarbons as diesel.
- (e) Total petroleum hydrocarbons as motor oil.
- (f) ND: Not detected at specified laboratory reporting limit.
- (g) Micrograms per liter.



SOURCE: BASE MAP FROM U.S.G.S. OAKLAND EAST AND SAN LEANDRO CA QUADRANGLES. 7.5 MINUTE SERIES TOPOGRAPHIC MAP, PHOTOREVISED 1980.



199510.171511 X:\SF-BREAD\JUL1E\SITEPLAN

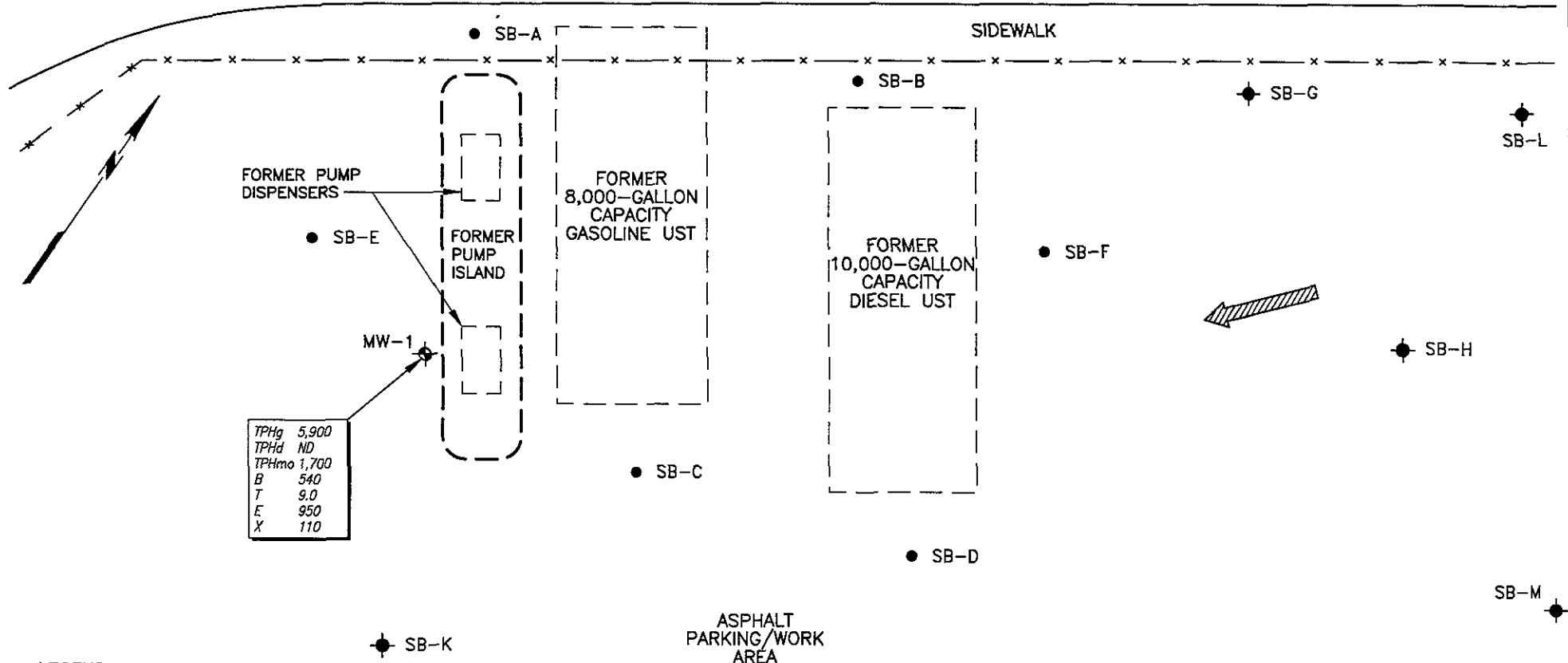
**SECOR**  
INTERNATIONAL  
INCORPORATED

DRAWN	CCR
APPR	DWM
DATE	12OCT95
JOB NO.	70007-001-01

**FIGURE 1**  
SAN FRANCISCO FRENCH BREAD  
580 JULIE ANN WAY  
OAKLAND, CALIFORNIA  
**SITE LOCATION MAP**



JULIE ANNE WAY



TPHg	5,900
TPHd	ND
TPHmo	1,700
B	540
T	9.0
E	950
X	110

**LEGEND:**

- ◆ MW-1 GROUNDWATER MONITORING WELL
- SB-D GTI SOIL BORING, JUNE 19, 1991
- ◆ SB-I SECOR SOIL BORING, NOVEMBER 19, 1993
- x x x x FENCE LINE

← APPROXIMATE GROUNDWATER FLOW DIRECTION



ASPHALT PARKING/WORK AREA

**ANALYTES**

- Total Petroleum Hydrocarbons as Gasoline
- Total Petroleum Hydrocarbons as Diesel
- Total Petroleum Hydrocarbons as Motor Oil
- Benzene
- Toluene
- Ethylbenzene
- Total Xylenes

**CHEMICAL ANALYTICAL RESULTS**

TPHg	5,900
TPHd	ND
TPHmo	1,700
B	540
T	9.0
E	950
X	110

← Not Detected at or Above the Laboratory Reporting Limit

← Concentration (ug/l)

**SECOR**  
INTERNATIONAL  
INCORPORATED

DRAWN	CCR
APPR	DWM
DATE	07MAR96
JOB NO.	50090-009-02

**FIGURE 2**  
SAN FRANCISCO FRENCH BREAD  
580 JULIE ANN WAY  
OAKLAND, CALIFORNIA  
**SITE PLAN WITH GROUNDWATER ANALYTICAL RESULTS**

Project: SFFBC - 580 JULIE ANN WAY, OAKLAND, CA		Log of Boring/Monitoring Well:
Boring Location: 8 FEET SW OF FORMER GASOLINE UST	Project No.: 50090-009-02	<b>MW-1</b>
Subcontractor and Equipment: BAYLAND DRILLING CME 55	Logged By: LZ	
Sampling Method: CAL. MOD. SPLIT SPOON	Monitoring Device: OVM 580B	Comments:
Start Date/Time: 2/27/96//0910	Finish Date/Time: 2/27/96//1130	
First Water (bgs): 6.0 FEET	Stabilized Water Level (bgs): 4.16 FEET	

Sample Number	Blows/foot	PID (ppm)	Depth (Feet)	Recovery	USCS Symbol	Water Level	Surface Elevation: NA	Top Casing Elevation: NA	Boring Abandonment/ Well Construction Details
							LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)		
HAND AUGER			0				ASPHALT/BASEROCK		
MW-1-3.5	25	24	1				GRAYISH GREEN (5G 4/2) GRAVELLY SAND (SW) fine- to coarse-grained, trace clay, fine to coarse gravel, loose, moist (20,75,0,5) (FILL)		
			2				DARK YELLOWISH BROWN (10YR 4/4) SANDY CLAY (CL) with fine gravel, fine- to coarse-grained sand, stiff, moist (10,20,0,70) (FILL)		
MW-1-5.5	19	617	3				BLACK (10YR 2/1) SAND (SW) fine- to coarse-grained, with fine to coarse gravel, medium dense, moist, slight chemical odor (10,90,0,0) (FILL)		
			4				DARK GREENISH GRAY (5G 4/1) SANDY CLAY (CL) medium- to coarse-grained sand, very stiff, moist to wet (0,25,0,75)		
			5				GREENISH GRAY (5BG 5/1) CLAY (CL) soft, wet, abundant root material (0,0,0,100)		
	2	5	6				DARK GREENISH GRAY (5G 4/1) SANDY CLAY (CL) with fine gravel, fine- to coarse-grained sand, yellow silt nodules, slight chemical odor (10,25,0,65)		
			7						
			8						
			9						
			10						
			11						
			12						
			13						
			14						
	16	19	15						
			16						
			17						
			18						
			19						
			20						
			21						
			22						
			23						
			24						
			25						
			26						
			27						
			28						
			29						
			30						

199603.121445 X:\SF-BREAD\JULIE\MW-1

# SEACOR WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 50090-009-02  
 PURGED BY: LB  
 SAMPLED BY: LB

WELL ID: MW-1  
 SAMPLE ID: MW-1  
 CLIENT NAME: SEERCS  
 LOCATION: Julie Ann Way, Oakland

TYPE: Groundwater  Surface Water \_\_\_\_\_ Treatment Effluent \_\_\_\_\_ Other \_\_\_\_\_

CASING DIAMETER (Inches): 2  3 \_\_\_\_\_ 4 \_\_\_\_\_ 4.5 \_\_\_\_\_ 6 \_\_\_\_\_ Other \_\_\_\_\_

CASING ELEVATION: (feet/MSL): _____	VOLUME IN CASING (gal) <u>1.7</u>
DEPTH TO WATER (feet): <u>4.16</u>	CALCULATED PURGE (gal) <u>17</u>
DEPTH OF WELL (feet): <u>14.27</u>	ACTUAL PURGE VOL (gal) <u>17</u>

DATE PURGED: 2/28/96 Start (2400 Hr) 0950 End (2400 Hr.) 1035  
 DATE SAMPLED: \_\_\_\_\_ Start (2400 Hr) \_\_\_\_\_ End (2400 Hr.) 1045

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1): \_\_\_\_\_

FIELD MEASUREMENTS						
TIME (2400 Hr)	VOLUME (gal)	pH (units)	E.C. (umho/cm@25°C)	TEMPERATURE (°F)	COLOR (Acsf)	TURBIDITY (NTU) Visual
<u>1000</u>	<u>6</u>	<u>8.96</u>	<u>1560</u>	<u>65.8</u>	<u>Tan</u>	<u>High</u>
<u>1012</u>	<u>10</u>	<u>7.61</u>	<u>1197</u>	<u>64.2</u>	<u>Y</u>	<u>Y</u>
<u>1023</u>	<u>14</u>	<u>7.14</u>	<u>1257</u>	<u>64.5</u>	<u>Y</u>	<u>Y</u>
<u>1035</u>	<u>17</u>	<u>7.33</u>	<u>1169</u>	<u>64.7</u>	<u>Y</u>	<u>Y</u>

D.O. (ppm): \_\_\_\_\_ COLOR, COBALT (0-100): \_\_\_\_\_

ODOR: Chemical Odor

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
_____ 2" Bladder Pump	_____ Baller (Teflon®)	_____ 2" Bladder Pump	_____ Baller (Teflon®)
_____ Centrifugal Pump	<input checked="" type="checkbox"/> Baller (PVC)	_____ DDL Sampler	<input checked="" type="checkbox"/> Baller (PVC/ <u>disposable</u> )
_____ Submersible Pump	_____ Baller (Stainless Steel)	_____ Submersible Pump	_____ Baller (Stainless Steel)
_____ Well Wizard™	_____ Dedicated	_____ Well Wizard™	_____ Dedicated
Other: _____		Other: _____	

WELL INTEGRITY: Good LOCK #: \_\_\_\_\_  
 REMARKS: Heavy Sleen

SIGNATURE: [Signature] Page 1 of 1

The logo consists of the letters 'SAL' in a bold, white, sans-serif font, set against a black square background. A white diagonal line or stroke is visible behind the letters.

# Superior

## Analytical Laboratory

---

SECOR  
90 NEW MONTGOMERY ST. #620  
SAN FRANCISCO, CA 94105

Date: March 4, 1996

Attn: Donald Moore

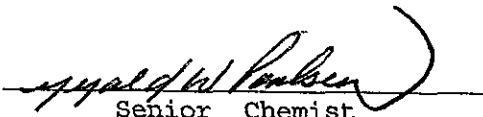
Laboratory Number : 20962

Project Number/Name : 50090-009-02  
Facility/Site : SFFBC

---

This report has been reviewed and  
approved for release.

---

  
Senior Chemist  
Account Manager

---

Customer Service: (800) 521-6109 • Laboratory: (510) 313-0850 • Facsimile: (510) 229-0916  
Post Office Box 2648 • 835 Arnold Drive • Suite #106 • Martinez, California 94553  
1555 Burke Street • Suite A • San Francisco, California 94124



# Superior

## Analytical Laboratory

SECOR  
Attn: Donald Moore

Project 50090-009-02  
Reported on March 4, 1996

Gasoline Range Petroleum Hydrocarbons and BTXE  
by EPA SW-846 5030/8015M/8020  
Gasoline Range quantitated as all compounds from C6-C10

### Chronology

Laboratory Number 20962

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
MW-1-5.5	02/27/96	02/28/96	02/29/96	02/29/96	CB281.05	02
MW-1	02/28/96	02/28/96	03/01/96	03/01/96	CB292.05	03

### QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CB281.05-02	Laboratory Spike	LS	Soil	02/28/96	02/28/96
CB281.05-06	226G75 W-3	MS 20954-03	Soil	02/28/96	02/28/96
CB281.05-07	226G75 W-3	MSD 20954-03	Soil	02/28/96	02/28/96
CB292.05-24	Laboratory Spike	LS	Water	03/01/96	03/01/96
CB292.05-26	SWBR-E1-1	MS 20961-01	Water	03/01/96	03/01/96
CB292.05-27	SWBR-E1-1	MSD 20961-01	Water	03/01/96	03/01/96
CB281.05-01	Method Blank	MB	Soil	02/28/96	02/28/96
CB292.05-11	Method Blank	MB	Water	02/29/96	02/29/96
CB281.05-03	Laboratory Spike	LS	Soil	02/28/96	02/28/96
CB281.05-08	226G75 W-3	MS 20954-03	Soil	02/28/96	02/28/96
CB281.05-09	226G75 W-3	MSD 20954-03	Soil	02/28/96	02/28/96
CB292.05-25	Laboratory Spike	LS	Water	03/01/96	03/01/96
CB292.05-28	SWBR-E1-1	MS 20961-01	Water	03/01/96	03/01/96
CB292.05-29	SWBR-E1-1	MSD 20961-01	Water	03/01/96	03/01/96



# Superior

## Analytical Laboratory

SECOR  
Attn: Donald Moore

Project 50090-009-02  
Reported on March 4, 1996

Gasoline Range Petroleum Hydrocarbons and BTXE  
by EPA SW-846 5030/8015M/8020  
Gasoline Range quantitated as all compounds from C6-C10

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
20962-02	MW-1-5.5	Soil	1.0	-
20962-03	MW-1	Water	10.0	-

### R E S U L T S   O F   A N A L Y S I S

Compound	20962-02		20962-03	
	Conc.	RL	Conc.	RL
	mg/kg		ug/L	
Gasoline_Range	15	1	5900	500
Benzene	0.170	0.005	540	5.0
Toluene	0.030	0.005	9.0	5.0
Ethyl Benzene	1.3	0.005	950	5.0
Xylenes	0.84	0.005	110	5.0
>> Surrogate Recoveries (%) <<				
Trifluorotoluene (SS)	131		115	



Superior

Analytical Laboratory

Gasoline Range Petroleum Hydrocarbons and BTXE
by EPA SW-846 5030/8015M/8020
Gasoline Range quantitated as all compounds from C6-C10

Quality Assurance and Control Data

Laboratory Number: 20962
Method Blank(s)

CB281.05-01 CB292.05-11
Conc. RL Conc. RL
mg/kg ug/L

Table with 5 columns: Gasoline\_Range, ND, 1, ND, 50. Rows include Benzene, Toluene, Ethyl Benzene, and Xylenes.

>> Surrogate Recoveries (%) <<

Trifluorotoluene (SS) 104 98



# Superior

## Analytical Laboratory

Gasoline Range Petroleum Hydrocarbons and BTXE  
 by EPA SW-846 5030/8015M/8020  
 Gasoline Range quantitated as all compounds from C6-C10

### Quality Assurance and Control Data

Laboratory Number: 20962

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/kg)						
	CB281.05 02 /	- Laboratory Control Spikes				
Benzene		0.200	0.20	100	65-125	
Toluene		0.200	0.20	100	65-125	
Ethyl Benzene		0.200	0.20	100	65-125	
Xylenes		0.600	0.60	100	65-125	
>> Surrogate Recoveries (%) <<						
Trifluorotoluene (SS)				94	50-150	
For Water Matrix (ug/L)						
	CB292.05 24 /	- Laboratory Control Spikes				
Benzene		20	21	105	65-125	
Toluene		20	21	105	65-125	
Ethyl Benzene		20	21	105	65-125	
Xylenes		60	64	107	65-125	
>> Surrogate Recoveries (%) <<						
Trifluorotoluene (SS)				90	50-150	
For Soil Matrix (mg/kg)						
	CB281.05 03 /	- Laboratory Control Spikes				
Gasoline_Range		20	17	85	65-135	
For Water Matrix (ug/L)						
	CB292.05 25 /	- Laboratory Control Spikes				
Gasoline_Range		2000	1700	85	65-135	





# Superior

## Analytical Laboratory

Gasoline Range Petroleum Hydrocarbons and BTXE  
 by EPA SW-846 5030/8015M/8020  
 Gasoline Range quantitated as all compounds from C6-C10

### Quality Assurance and Control Data

Laboratory Number: 20962

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/kg)						
CB281.05 06 / 07 - Sample Spiked: 20954 - 03						
Benzene	ND	0.200	0.22/0.22	110/110	65-125	0
Toluene	ND	0.200	0.22/0.21	110/105	65-125	5
Ethyl Benzene	ND	0.200	0.21/0.21	105/105	65-125	0
Xylenes	ND	0.600	0.64/0.63	107/105	65-125	2
>> Surrogate Recoveries (%) <<						
Trifluorotoluene (SS)				100/104	50-150	
For Water Matrix (ug/L)						
CB292.05 26 / 27 - Sample Spiked: 20961 - 01						
Benzene	ND	20	20/21	100/105	65-125	5
Toluene	ND	20	20/21	100/105	65-125	5
Ethyl Benzene	ND	20	20/20	100/100	65-125	0
Xylenes	ND	60	61/62	102/103	65-125	1
>> Surrogate Recoveries (%) <<						
Trifluorotoluene (SS)				89/94	50-150	
For Soil Matrix (mg/kg)						
CB281.05 08 / 09 - Sample Spiked: 20954 - 03						
Gasoline_Range	ND	20	16/17	80/85	65-135	6
For Water Matrix (ug/L)						
CB292.05 28 / 29 - Sample Spiked: 20961 - 01						
Gasoline_Range	ND	2000	2000/1900	100/95	65-135	5



**Superior**

**Analytical Laboratory**

Narrative:

Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



**Superior**

**Analytical Laboratory**

SECOR  
Attn: Donald Moore

Project 50090-009-02  
Reported on March 4, 1996

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

Chronology

Laboratory Number 20962

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
MW-1-5.5	02/27/96	02/28/96	02/29/96	02/29/96	CB291.24	02

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
CB291.24-03	Method Blank	MB	Soil	02/29/96	02/29/96
CB291.24-04	Laboratory Spike	LS	Soil	02/29/96	02/29/96
CB291.24-05	Laboratory Spike Duplicate	LSD	Soil	02/29/96	02/29/96
CB291.24-06	ES2CORP	MS 20964-01	Soil	02/29/96	02/29/96
CB291.24-07	ES2CORP	MSD 20964-01	Soil	02/29/96	02/29/96



Superior

Analytical Laboratory

SECOR  
Attn: Donald Moore

Project 50090-009-02  
Reported on March 4, 1996

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
20962-02	MW-1-5.5	Soil	1.0	-

RESULTS OF ANALYSIS

Compound	20962-02 Conc. RL ug/Kg
bis(2-chloroethyl) ether	ND 300
aniline	ND 300
phenol	ND 300
2-chlorophenol	ND 300
1,3-dichlorobenzene	ND 300
1,4-dichlorobenzene	ND 300
1,2-dichlorobenzene	ND 300
benzyl alcohol	ND 300
bis-(2-chloroisopropyl) ether	ND 300
2-methylphenol	ND 300
hexachloroethane	ND 300
n-nitroso-di-n-propylamine	ND 300
4-methylphenol	ND 300
nitrobenzene	ND 300
isophorone	ND 300
2-nitrophenol	ND 300
2,4-dimethylphenol	ND 300
bis(2-chloroethoxy)methane	ND 300
2,4-dichlorophenol	ND 300
1,2,4-trichlorobenzene	ND 300
naphthalene	3300 300
benzoic acid	ND 300
4-chloroaniline	ND 300
hexachlorobutadiene	ND 300
4-chloro-3-methylphenol	ND 300
2-methyl-naphthalene	3600 300
hexachlorocyclopentadiene	ND 300
2,4,6-trichlorophenol	ND 300
2,4,5-trichlorophenol	ND 300
2-chloronaphthalene	ND 300
2-nitroaniline	ND 300



# Superior

## Analytical Laboratory

SECOR  
Attn: Donald Moore

Project 50090-009-02  
Reported on March 4, 1996

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
20962-02	MW-1-5.5	Soil	1.0	-

### RESULTS OF ANALYSIS

Compound	20962-02 Conc. RL ug/Kg
----------	-------------------------------

acenaphthylene	ND 300
dimethylphthlate	ND 300
2,6-dinitrotoluene	ND 300
Acenaphthene	ND 300
3-nitroaniline	ND 300
2,4-dinitrophenol	ND 300
dibenzofuran	ND 300
2,4-dinitrotoluene	ND 300
4-nitrophenol	ND 300
fluorene	ND 300
4-chlorophenyl-phenylether	ND 300
diethylphthlate	ND 300
4-nitroaniline	ND 300
4,6-dinitro-2-methylphenol	ND 300
n-nitrosodiphenylamine	ND 300
4-bromo-phenyl-phenylether	ND 300
hexachlorobenzene	ND 300
pentachlorophenol	ND 300
phenanthrene	ND 300
anthracene	ND 300
di-n-butylphthlate	760 300
fluoranthene	ND 300
benzidine	ND 300
pyrene	ND 300
butylbenzylphthlate	ND 300
3,3'-dichlorobenzidine	ND 300
Benzo (a) Anthracene	ND 300
chrysene	ND 300
bis (2-ethylhexyl) phthalate	ND 300
di-n-octylphthalate	ND 300
benzo (b, k) fluoranthene	ND 300



# Superior

## Analytical Laboratory

SECOR  
Attn: Donald Moore

Project 50090-009-02  
Reported on March 4, 1996

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
20962-02	MW-1-5.5	Soil	1.0	-

### RESULTS OF ANALYSIS

Compound	20962-02 Conc. RL ug/Kg
----------	-------------------------------

Benzo (a) Pyrene	ND 300
Indeno (1, 2, 3) Pyrene	ND 300
dibenzo [a, h] anthracene	ND 300
9H-Carbazole	ND 300
Benzo (g, h, i) Perylene	ND 300

#### >> Surrogate Recoveries (%) <<

2-fluorophenol	75
phenol-d5	90
nitrobenzene-d5	74
2-fluorobiphenyl	84
2,4,6-tribromophenol	84
terphenyl-d14	95



# Superior

## Analytical Laboratory

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

### Quality Assurance and Control Data

Laboratory Number: 20962

Method Blank(s)

CB291.24-03

Conc. RL

ug/Kg

---

bis (2-chloroethyl) ether	ND	300
aniline	ND	300
phenol	ND	300
2-chlorophenol	ND	300
1,3-dichlorobenzene	ND	300
1,4-dichlorobenzene	ND	300
1,2-dichlorobenzene	ND	300
benzyl alcohol	ND	300
bis- (2-chloroisopropyl) ether	ND	300
2-methylphenol	ND	300
hexachloroethane	ND	300
n-nitroso-di-n-propylamine	ND	300
4-methylphenol	ND	300
nitrobenzene	ND	300
isophorone	ND	300
2-nitrophenol	ND	300
2,4-dimethylphenol	ND	300
bis (2-chloroethoxy) methane	ND	300
2,4-dichlorophenol	ND	300
1,2,4-trichlorobenzene	ND	300
naphthalene	ND	300
benzoic acid	ND	300
4-chloroaniline	ND	300
hexachlorobutadiene	ND	300
4-chloro-3-methylphenol	ND	300
2-methyl-naphthalene	ND	300
hexachlorocyclopentadiene	ND	300
2,4,6-trichlorophenol	ND	300
2,4,5-trichlorophenol	ND	300
2-chloronaphthalene	ND	300
2-nitroaniline	ND	300
acenaphthylene	ND	300
dimethylphthalate	ND	300
2,6-dinitrotoluene	ND	300
Acenaphthene	ND	300
3-nitroaniline	ND	300
2,4-dinitrophenol	ND	300



# Superior

## Analytical Laboratory

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

### Quality Assurance and Control Data

Laboratory Number: 20962

Method Blank(s)

CB291.24-03

Conc. RL

ug/Kg

---

dibenzofuran	ND	300
2,4-dinitrotoluene	ND	300
4-nitrophenol	ND	300
fluorene	ND	300
4-chlorophenyl-phenylether	ND	300
diethylphthlate	ND	300
4-nitroaniline	ND	300
4,6-dinitro-2-methylphenol	ND	300
n-nitrosodiphenylamine	ND	300
4-bromo-phenyl-phenylether	ND	300
hexachlorobenzene	ND	300
pentachlorophenol	ND	300
phenanthrene	ND	300
anthracene	ND	300
di-n-butylphthlate	ND	300
fluoranthene	ND	300
benzidine	ND	300
pyrene	ND	300
butylbenzylphthlate	ND	300
3,3'-dichlorobenzidine	ND	300
Benzo (a) Anthracene	ND	300
chrysene	ND	300
bis (2-ethylhexyl) phthalate	ND	300
di-n-octylphthalate	ND	300
benzo (b, k) fluoranthene	ND	300
Benzo (a) Pyrene	ND	300
Indeno (1, 2, 3) Pyrene	ND	300
dibenzo [a, h] anthracene	ND	300
9H-Carbazole	ND	300
Benzo (g, h, i) Perylene	ND	300

>> Surrogate Recoveries (%) <<

2-fluorophenol	77
phenol-d5	93
nitrobenzene-d5	83
2-fluorobiphenyl	86
2,4,6-tribromophenol	69





**Superior**

**Analytical Laboratory**

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

Quality Assurance and Control Data

Laboratory Number: 20962

Method Blank(s)

CB291.24-03

Conc. RL

ug/Kg

---

terphenyl-d14

77



# Superior

## Analytical Laboratory

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

### Quality Assurance and Control Data

Laboratory Number: 20962

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
----------	--------------	-----------	------------	------------	----------	-------

For Soil Matrix (ug/Kg)

CB291.24 04 / 05 - Laboratory Control Spikes

phenol		3300	2533/2388	77/72	26-90	7
2-chlorophenol		3300	2605/2487	79/75	25-102	5
1,4-dichlorobenzene		1650	1388/1178	84/71	28-104	17
n-nitroso-di-n-propylamine		1650	1533/1438	93/87	41-126	7
1,2,4-trichlorobenzene		1650	1519/1380	92/84	38-107	9
4-chloro-3-methylphenol		3300	2692/2488	82/75	26-103	9
Acenaphthene		1650	1474/1363	89/83	31-137	7
2,4-dinitrotoluene		1650	1378/1270	84/77	28-118	9
4-nitrophenol		3300	616/686	19/21	11-114	10
pentachlorophenol		3300	2314/2301	70/70	17-109	0
pyrene		1650	1159/1097	70/66	35-142	6

>> Surrogate Recoveries (%) <<

2-fluorophenol				86/82	25-121	
phenol-d5				94/90	24-113	
nitrobenzene-d5				89/86	23-120	
2-fluorobiphenyl				91/88	30-115	
2,4,6-tribromophenol				86/83	19-122	
terphenyl-d14				83/82	18-137	

For Soil Matrix (ug/Kg)

CB291.24 06 / 07 - Sample Spiked: 20964 - 01

phenol	ND	20000	11965/13387	60/67	26-90	11
2-chlorophenol	ND	20000	12027/13740	60/69	25-102	14
1,4-dichlorobenzene	ND	9900	6866/7387	69/75	28-104	8
n-nitroso-di-n-propylamine	ND	9900	7308/8268	74/84	41-126	13
1,2,4-trichlorobenzene	ND	9900	7578/7959	77/80	38-107	4
4-chloro-3-methylphenol	ND	20000	13035/14723	65/74	26-103	13
Acenaphthene	ND	9900	7017/7759	71/78	31-137	9
2,4-dinitrotoluene	ND	9900	6904/7917	70/80	28-118	13
4-nitrophenol	ND	20000	4541/3965	23/20	11-114	14
pentachlorophenol	ND	20000	18569/20734	93/104	17-109	11



# Superior

## Analytical Laboratory

EPA SW-846 Method 8270 Semivolatile Organics by GC/MS

### Quality Assurance and Control Data

Laboratory Number: 20962

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
pyrene	ND	9900	4838/5801	49/59	35-142	19
>> Surrogate Recoveries (%) <<						
2-fluorophenol				67/75	25-121	
phenol-d5				75/82	24-113	
nitrobenzene-d5				72/78	23-120	
2-fluorobiphenyl				73/79	30-115	
2,4,6-tribromophenol				80/80	19-122	
terphenyl-d14				59/70	18-137	

#### Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



Superior

Analytical Laboratory

SECOR
Attn: Donald Moore

Project 50090-009-02
Reported on March 4, 1996

Total Extractable Petroleum Hydrocarbons
by EPA SW-846 Method 8015M

Chronology

Laboratory Number 20962

Table with 7 columns: Sample ID, Sampled, Received, Extract., Analyzed, QC Batch, LAB #. Rows include MW-1-5.5 and MW-1.

QC Samples

Table with 7 columns: QC Batch #, QC Sample ID, TypeRef., Matrix, Extract., Analyzed. Rows include Method Blank, Laboratory Spike, and MW-1-5.5 samples.



# Superior

## Analytical Laboratory

SECOR  
Attn: Donald Moore

Project 50090-009-02  
Reported on March 4, 1996

Total Extractable Petroleum Hydrocarbons  
by EPA SW-846 Method 8015M

LAB ID	Sample ID	Matrix	Dil. Factor	Moisture
20962-02	MW-1-5.5	Soil	10.0	-
20962-03	MW-1	Water	2.0	-

### RESULTS OF ANALYSIS

Compound	20962-02		20962-03	
	Conc.	RL	Conc.	RL
	mg/kg		ug/L	
Diesel:	ND	10	ND	100
Motor Oil	240	100	1700	1000
>> Surrogate Recoveries (%) <<				
Tetracosane	137		108	



**Superior**

**Analytical Laboratory**

Total Extractable Petroleum Hydrocarbons  
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 20962  
Method Blank(s)

CB291.21-01		CB292.42-01	
Conc.	RL	Conc.	RL
ug/L		mg/Kg	

---

Diesel:	ND	50	ND	1
Motor Oil	ND	500	ND	100

>> Surrogate Recoveries (%) <<  
Tetracosane

97	119
----	-----



# Superior

## Analytical Laboratory

Total Extractable Petroleum Hydrocarbons  
by EPA SW-846 Method 8015M

Quality Assurance and Control Data

Laboratory Number: 20962

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Water Matrix (ug/L)						
CB291.21 02 / 03 - Laboratory Control Spikes						
Diesel:		1000	850/890	85/89	50-150	5
>> Surrogate Recoveries (%) <<						
Tetracosane				93/91	50-150	
For Soil Matrix (mg/Kg)						
CB292.42 02 / 03 - Laboratory Control Spikes						
Diesel:		33	27/28	82/85	50-150	4
>> Surrogate Recoveries (%) <<						
Tetracosane				105/110	50-150	
For Soil Matrix (mg/Kg)						
CB292.42 04 / 05 - Sample Spiked: 20962 - 02						
Diesel:	190	33	45RG/104RG	-439/-261	50-150	-51
>> Surrogate Recoveries (%) <<						
Tetracosane				146/165I	50-150	



Superior

Analytical Laboratory

Narrative:

- I - The surrogate recovery was high due to the presence of interfering compounds in the sample.
- R - MS and/or MSD recoveries were out of control limits. LCS / LCSD recoveries were within acceptable limits.
- G - The variation in spike recoveries reflects the nonhomogeneity of the sample.

Definitions:

ND = Not Detected

RL = Reporting Limit

NA = Not Analysed

RPD = Relative Percent Difference

ug/L = parts per billion (ppb)

mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)

mg/kg = parts per million (ppm)



## SEACOR Chain-of-Custody Record

Field Office: San Francisco  
 Address: 90 New Montgomery St. #620  
San Francisco, CA 94105

Additional documents are attached, and are a part of this Record.  
 Job Name: SFFBC Julie Ann Way  
 Location: Oakland, CA

Project # 2090-009-02 Task # 002  
 Project Manager Don Moore  
 Laboratory Superior  
 Turnaround Time Standard  
 Sampler's Name Liping Zhang  
 Sampler's Signature [Signature]

				Analysis Request										Number of Containers				
Sample ID	Date	Time	Matrix	HClD	TPH <sub>g</sub> /BTEX/WTPH-G 8015 (modified)/8020	TPH <sub>d</sub> /WTPH-D + TPH <sub>no</sub> 8015 (modified)	TPH 418.1/WTPH 418.1	Aromatic Volatiles 602/8020	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Semi-volatile Organics 625/8270 (GC/MS)	Pesticides/PCBs 608/8080	Total Lead 7421		Priority Pollutant Metals (13)	TCLP Metals	Comments/ Instructions	
MW-1-3.5	2/27	0940	Soil														Hold as per Don Moore 3/1/96	1
MW-1-15.5	2/27	0955	Soil		X	X												1
* MW-1	2/28	1045	Water		X	X												5

Please Initials:  
 Samples Stored in ice. [Signature]  
 Appropriate containers. [Signature]  
 Samples preserved. [Signature]  
 VOA's without headspace. [Signature]  
 Comments: \_\_\_\_\_

Special Instructions/Comments:  
 Please keep water sample after initial analysis.

Relinquished by:  
 Sign [Signature]  
 Print Liping Zhang  
 Company SEACOR  
 Time 13:26 Date 2/28/96

Relinquished by:  
 Sign [Signature]  
 Print Roy Farrow  
 Company Superior  
 Time 2:20 Date 2/28/96

Received by:  
 Sign [Signature]  
 Print Roy Farrow  
 Company Superior  
 Time 1:35 Date 2/28/96

Received by:  
 Sign [Signature]  
 Print Polly Farrow  
 Company [Signature]  
 Time 2:20 Date 2/28/96

Sample Receipt

Total no. of containers:	7
Chain of custody seals:	
Rec'd. good condition/cclid:	
Conforms to record:	

Client: SEACOR  
 Client Contact: Don Moore  
 Client Phone: (415) 82-1548